

culverts that were silted up. Perhaps there are no records which would show that the Malacca river is less constant than formerly, but it is more than probable that it is less constant as a consequence of the extensive clearing of the rolling ground about the Malacca-Negri Sembilan boundary.

Virgin forest soils are, in Malaya, most interesting. They can be destroyed in a few years; but it would seem that they can only be build up by several tens of years; perhaps it takes one hundred to restore them. At any rate the real forest trees appear to demand one hundred years§ of preparation before they are again at home. Belukar in all its stages is the evidence of soil unfit for them. What they need and the soil has not got when carrying belukar is probably porosity plus the right soil fauna; and of soil fauna here we are extremely ignorant.

I. H. BURKILL.

SOME TESTS OF GARDEN VEGETABLES IN SINGAPORE—LETTUCES.

If reference be made to this Bulletin Vol. 2, No. 1, 1918, p. 9, a note will be found by Prof. C. F. Baker upon lettuces tried by him in the Economic Garden, Singapore. Since then, other lettuces have been tried, and the last of the experiments done, will be reported on here.

The seed came from three different firms, Messrs. Sutton and Sons, Reading, England; Messrs. Vilmorin, Paris; and Messrs. Dreer & Co. Philadelphia U. S. A. The lettuces of different origin could not be tried against each other, as it was impossible to sow them together, but those from each firm were grown side by side.

The method of cultivation was as follows:—

Soil and site. The soil selected for growing these was of two sorts (1) sandy loam; and (2) rich damp loam obtained from peat by constant cultivation, good drainage, and incorporation of lime. The soil was dug over twice, manured with cow manure at the same time, and then left exposed to the sun. After a week or so, beds 3 ft. broad and long according to the site, were made, and kept ready to receive the seedlings.

As for the sites, they were two: the first was above the zone of floods which have become somewhat frequent in the Economic Garden in the early part of the year; while the second was liable to flood. The first situation answered well while the weather was wet and in the dry spells with precautions, in giving water, keeping a fine dust mulch and giving shade in the middle of the day.

Germination and growth. Soon after the seeds were received they were sown in boxes in a soil with an addition of sand to run off extra water and to prevent damping off. The seeds usually

§ Cf. in the Gardens' Bulletin II No. 5, pp. 145—157, an account of Secondary jungle thirty years old,

took 40-48 hrs. to come up; but if not sown promptly—in some cases, it was not possible to do so—they took longer even up to 5-7 days to germinate. The cause may be sought in weakened vitality which is lost exceedingly early in this hot moist climate.

When the seedlings were 2-2½ ins. high, that was in 7-9 days, they were transplanted into the beds in the afternoon or in cloudy days all the day long, in rows with 9" between the rows and also 9" between the seedlings.

A fortnight from transplanting, when the seedlings had taken, an emulsion of cowdung, (1 bucket of dung to 8 of water) was poured in between the rows. Fish manure and burnt earth were also used, but the first was found to be the most suitable, for it is in a more assimilable form. The growth was rapid after this and the salads were uprooted as follows.

Suttons'	after 41 days.
Dreer's	43 „
Vilmorin's	44 „

The weightments showed that the maximum weight was reached 10-15 days later; it gradually rose from ¾ oz. or 1½ oz. according to the type to 2-3 ozs. when the maximum growth was recorded.

Weather did not treat the different sowings equally, for there were constant changes in it from dry to wet, wet weather being unusually prevalent during the first quarter of the year of 1921. The lettuces in the damper situations grew very well in the dry spells; but in wet periods, those on the sandy loam did better. Artificial shade is essential in the seedling stage for 2-3 weeks in varying degree according to the weather to keep off heavy rains as well as midday intense heat; shade also prevents too much evaporation of water from the sandy loam; while in the case of damp soil, it keeps the air in contact with the plants humid.

Almost all strains succumbed to hard rains but least those which have long leaves—cos type—or behaving as cos. In wet periods, most of the lettuces lost much of their foliage.

Another noticeable feature of lettuces, is that, though warranted as Cabbage type, in this forcing climate, they did not behave as such. Many ran to stem; while a few only form loose and all less compact heads. Cos or behaving as cos, were early ones while the other type was later by a week or so.

The lettuces were distributed for opinion to many people, and the following were appreciated.

Suttons'. Ideal, Nonsuch, Early Paris, Golden Ball, and of these there was an unanimous opinion that Ideal and Nonsuch were the best.

Dreer's. Early curled Simpson, Black seeded Simpson, Mammoth salamander, Big Boston, Improved Hanson, Golden Queen, Wonderful.

Vilmorin's. Green Provence. Unfortunately Vilmorin's lettuces were sunk under flood water on 5/5/21 and therefore were not given full trial.

